

Application No.: 09/903,330  
Amendment dated July 22, 2004  
Reply to Office Action of May 19, 2004

**REMARKS**

Claims 1-50 are pending in the application; the status of the claims is as follows:

Claims 1-20, and 36-50 are allowed.

Claims 21-29, and 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,949,561 to Goossen et al. ("Goossen") in view of U.S. Patent No. 5,455,421 to Spears ("Spears") and in further view of U.S. Patent No. 6,414,769 B1 to Meli et al. ("Meli").

Claims 30, 31, and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Goossen in view of Spears and Meli and in further view of U.S. Patent No. 4,322,693 to Fry ("Fry").

Claims 32 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Goossen in view of Spears and Meli and in further view of U.S. Patent No. 6,233,380 B1 to Ferrieu ("Ferrieu").

The indication, in the Office Action, that the Examiner has no objections to the drawings filed on July 11, 2001, is noted with appreciation.

Claims 3, 4, 19, and 23 have been amended to correct antecedent basis errors. Claims 29-32 and 36 have been amended to correct grammatical errors. Claim 46 has been amended to correct its dependency from claim 39 to claim 45. These changes are not necessitated by the prior art, are unrelated to the patentability of the invention over the prior art, and do not introduce any new matter.

**35 U.S.C. § 103(a) Rejections**

The rejection of claims 21-29, and 33 under 35 U.S.C. § 103(a), as being unpatentable over Goossen in view of Spears and in further view of Meli, is respectfully traversed based on the following.

Claim 21 recites, *inter alia*:

A method for receiving a high bandwidth multiple wavelength, wavelength division multiplexing optical communication data stream . . . the method comprising the steps of:

utilizing a plurality of photodetectors to receive the plurality of wavelength channels . . . each individual one of the photodetectors comprises a ***diffractive*** resonant optical cavity . . . (emphasis added).

X  
To show *prima facie* obviousness of a claimed invention, each of the claim limitations must be taught or suggested by the cited references. Spears teaches a photodetector that uses “an integral optical cavity which is resonant at the wavelength of the optical signals to be detected.” (Col. 2, lines 49-50). The resonance of the optical cavity in Spears is a function of the total optical thickness of the cavity. (Col. 4, lines 29-38). Therefore, the desired wavelength resonance is varied by manipulating the thickness of the cavity. If one layer is omitted, another layer is simply “thickened a corresponding amount.” (Col. 5, lines 44-46 and Fig. 1). This configuration defines a vertical resonant optical cavity. In addition, Spears makes no mention of diffraction. Therefore, this cannot be a diffractive resonant optical cavity.

In contrast to Spears, the invention in claim 21 provides for the use of photodetectors, each of which “comprises a diffractive resonant optical cavity.” Figure 5 of the present application illustrates a three-dimensional diffractive resonant optical cavity (DROC). The resonant wavelength of the DROC is primarily a function of the geometry of elongate elements 400 and 402. (Paragraph 37 and Fig. 5). The resonant wavelength can be tuned by varying the period between adjacent elongate elements 400 and 402. (Paragraph 37 and Fig. 5). Changes in the thickness of the elongate elements also change

the resonant wavelength. (Paragraph 37 and Fig. 5). Spears discloses what resembles a stack of pancakes whereas the DROC of claim 21 is a waffle-like structure. As noted above, the resonance of the optical cavity in Spears is a function only of the thickness of the cavity and includes no diffraction. Thus, Spears does not disclose or suggest the use of a diffractive resonant optical cavity of claim 21.

As the examiner notes, Meli teaches an optical receiver and an amplifier. Meli does not disclose or suggest the use of a photodetector having a diffractive resonant optical cavity. The examiner also noted that Goossen differs from the invention in claim 21 in that Goossen does not disclose the use of a diffractive resonant optical cavity. The cited references, Spears, Goossen, and Meli, do not teach the limitation of claim 21 of a photodetector having a diffractive resonant optical cavity. Therefore, claim 21 cannot be rendered obvious because a showing of *prima facie* obviousness requires that each of the claim limitations be disclosed or suggested by the cited references.

Claim 22 depends from and contains all the limitations of claim 21. To show *prima facie* obviousness of a claimed invention, each of the claim limitations must be disclosed or suggested by the cited references. As noted above, Spears, Goossen, and Meli do not disclose or suggest the use of a diffractive resonant optical cavity of claim 21. In addition, claim 22 recites, *inter alia*, "... the number of the photodetectors is equal to an odd integer multiple of the number of the wavelength channels." The multiple photodetectors serve several purposes described in the specification. The received signal may be averaged across the photodetectors to reduce noise. (Paragraph 37). Additionally, using thresholds on each photodetector enables "voting" between an odd number of photodetectors to determine the received signal. (Paragraph 37). Goossen does not teach a number of photodetectors equal to an odd integer multiple of the number of wavelength channels. Therefore, claim 22 is not obvious because Spears, Goossen, and Meli do not teach or suggest each of the elements of claim 22, including the diffractive resonant optical cavity and the number of photodetectors being an odd integer multiple of the number of wavelength channels.

Claims 23-29 and 33 depend from and contain all the limitations of claim 21. To show *prima facie* obviousness of a claimed invention, each of the claim limitations must be taught or suggested by the cited references. As noted above, Spears, Goossen, and Meli do not disclose or suggest the use of a diffractive resonant optical cavity of claim 21. Because claims 23-29 and 33 depend from claim 21, claims 23-29 and 33 are similarly nonobvious for at least the same reasons as claim 21.

Accordingly, it is respectfully requested that the rejection of claims 21-29, and 33 under 35 U.S.C. § 103(a) as being unpatentable over Goossen in view of Spears and in further view of Meli, be reconsidered and withdrawn.

The rejection of claims 30, 31, and 34 under 35 U.S.C. § 103(a), as being unpatentable over Goossen in view of Spears and Meli and in further view of Fry, is respectfully traversed based on the following.

Claims 30, 31, and 34 depend from and contain all the limitations of claim 21. As discussed above, Spears, Goossen, and Meli do not teach or suggest the use of a diffractive resonant optical cavity as required by claim 21. Fry relates to a multiple wavelength ammonia laser (Col. 1, lines 8-9) and does not teach or suggest the use of a diffractive resonant optical cavity. To show *prima facie* obviousness of a claimed invention, all the claim limitations must be disclosed or suggested by the cited references. Spears, Goossen, Meli, and Fry do not disclose or suggest the use of a diffractive resonant optical cavity. Thus, claims 30, 31, and 34 cannot be rendered obvious because all the limitations of claim 21, from which they depend, are not disclosed or suggested by the cited art.

Accordingly, it is respectfully requested that the rejection of claims 30, 31, and 34 under 35 U.S.C. § 103(a) as being unpatentable over Goossen in view of Spears and Meli and in further view of Fry, be reconsidered and withdrawn.

The rejection of claims 32 and 35 under 35 U.S.C. § 103(a), as being unpatentable over Goossen in view of Spears and Meli and in further view of Ferrieu, is respectfully traversed based on the following.

Claims 32 and 35 depend from and contain all the limitations of claim 21. As discussed above, Spears, Goossen, and Meli do not disclose or suggest the use of a diffractive resonant optical cavity of claim 21. Ferrieu relates to improvements in methods for electrooptic signal processing (Col. 1, lines 21-32) and was cited by the examiner for disclosing a quantum cascade laser. (Col. 2, lines 43-50). Ferrieu does not disclose or suggest the use of a diffractive resonant optical cavity. To show *prima facie* obviousness of a claimed invention, all the claim limitations must be disclosed or suggested by the cited references. Spears, Goossen, Meli, and Ferrieu do not disclose or suggest the use of a diffractive resonant optical cavity, so claims 32 and 35 cannot be rendered obvious because all the limitations of claim 21, from which they depend, are not disclosed or suggested by the cited art.

Accordingly, it is respectfully requested that the rejection of claims 32 and 35 under 35 U.S.C. § 103(a) as being unpatentable over Goossen in view of Spears and Meli and in further view of Ferrieu, be reconsidered and withdrawn.

### **CONCLUSION**

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

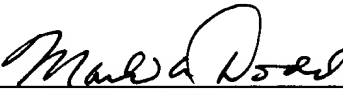
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Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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